

UV Air Disinfection and Filtration Unit

Manufactured by Venturi Aeration, Inc.
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Venturi Aeration, Inc. (Pelham, NH) manufactures an Ultraviolet Air Disinfection and Filtration Unit for use in connection with drinking water systems that use venturi aerators for non-chemical corrosion control. Non-chemical corrosion control is achieved by stripping carbon dioxide (as a carbonate) and other incidental contaminants such as VOCs and other partially soluble substances (e.g. PCE, TCE, Radon, etc.) that have weak Henry's Constant values.

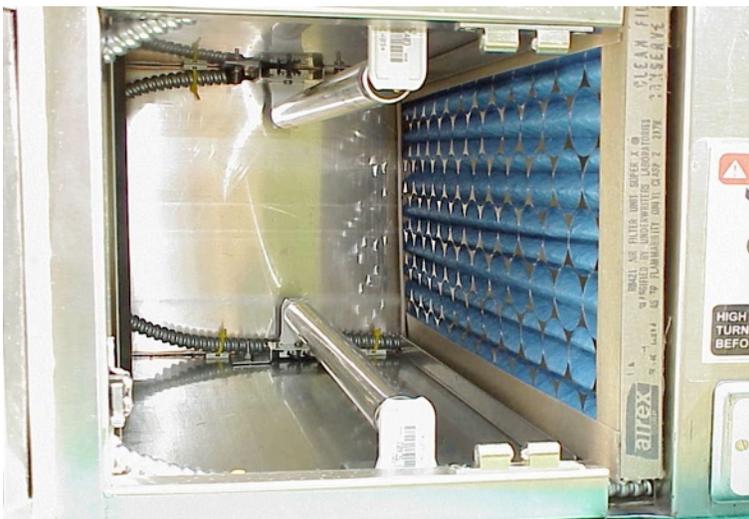
The venturi aerator units create a natural vacuum that aspirates outside ambient air that is transferred as dissolved oxygen into the water to enhance taste and reduce odors (sulfides). The UV Air Disinfection unit can either be used with the venturi aerator in a treatment mode or as a stand-alone air disinfection and filtration unit in connection with other technologies, e.g. stripper towers, cascading trays, etc. In either mode the UV Air Disinfection unit is used to treat the influent air by disinfecting the air through exposure and contact time to an UV light source (UV-Germicidal) which disinfects any airborne spores or microbial materials in the air. Airborne particulate are deposited on a pleated paper fabric filter which is basked in the same UV light source thereby preventing the growth of spores or bacteria on the fabric filter.

Use in connection with Chlorine Disinfection Waiver. The first use of the venturi aerator with UV Air Disinfection and Filtration was in 1990 at the Pelham High School, Pelham, NH. Even though the aquifer contains acidic source waters (pH = 5.9), along with soluble Radon (2200 pCi), it also contained 16-20 ug/L of PCE. The venturi aerator process was selected because it stripped carbon dioxide to non-chemically raise pH to 7.5, Radon is reduced to <300 pCi, and PCE is stripped to non-detect levels (ND). Since this portion of the Merrimack aquifer has no history (known or tested) for Giardia or Cryptosporidium contamination, the School applied for a chlorine "disinfection waiver." They were granted the waiver by the New Hampshire Board of Health with the proviso that should routine testing reveal spores or cysts from the source waters, disinfection of the treated waters would have to be effected and chlorine must be available on a standby basis. In 1990 Venturi Aeration, Inc. developed the UV Air Disinfection and Filtration Unit for the specific Pelham High School application. This was to ensure that nothing would aspirate any airborne contaminants into the water through the self-aspirating vacuum of venturi aerator units. This UV Air Disinfection and Filtration unit has been working continuously since 1990--with routine maintenance consisting of changing the UV bulbs and pleated fabric filters--without any discrepancies and service interruptions.

Materials of Construction: The UV Air Disinfection and Filtration Unit is made from FDA food grade-stainless steel. While the PM40 Pleated Non-woven Poly-Paper fabric filter is corrugated with a wire mesh for rigidity and encased in a corrugated paper media. The filter media is a non-woven cotton/poly blend fabric type based on ASHRAE Standard 52-76. The frame is a rigid, heavy duty moisture resistant FDA Beverage Board. The filter pack is bonded to the inside periphery of the moisture resistant frame, thus eliminating the possibility of air bypass. The wire grid is bonded to the filter media to eliminate the possibility of media oscillation and media pull away.



100% of the Air Filter's surface is basked in the UV light. Unlike other manufacturers that **do not** configure their UV Air systems to have their particulate filter exposed to the UV light source, Venturi Aeration, Inc. has chosen a better design. This design ensures that 100% of the PM40 filter is directly exposed to the UV Germicidal light to specifically inhibit the growth of mold or any bacterial spores the could be trapped on the PM40 filter.



UV Germicidal Bulbs: The UV Air Disinfection unit uses two (2) Ultraviolet Germicidal Lamps. It emits ultraviolet radiation. To protect workers from exposure to the UV light, a micro-switch is connect to the door that shut off power in case it wasn't turned off before opening the unit.

The UV Air Disinfection unit has two "lit" lamps that indicate that the bulbs are on. If an UV bulb fails the lamp light for that bulb turns off. The only control is an "On – Off" switch.



The PM 40 Pleated Air Filter is manufactured by Airex Corporation, Hudson, NH. The 1" thick 10" x 20" filter element has 14 pleats per linear foot, and can handle airflow up to 1100 scfm. However, the typical airflow for venturi aerators ranges from 60 scfm (2" unit) to 325 scfm (6" unit) well under the rating for this filter. It contains 4.5 sq ft of media area. The 10" x 20" size PM40 filter is manufactured for Venturi Aeration to fit the channel opening in the UV Air Disinfection Unit. Maximum operating air temperature is 180 degree F.